APPENDIX B. FUNCTIONAL-SPECIALIZATION QUALIFICATION PROGRAM

This appendix provides examples and content of a functional-specific qualification program that would require an analysis of the job and its tasks to make an installation-specific list. Additional specialization may be employed with respect to the collective capability of the organization.

At the Entry-Level classification, requirements generally address understanding of each of the major tasks and related issues. At the other end of the spectrum, the Senior Specialist's understanding should be sufficient to address issue resolution and new initiatives. As with the classification levels, the extent of requirements also should be established, e.g., length of in-facility assignments and number of evolutions such as completion of computer-code evaluations for subcriticality.

B.1 Analysis. The actual content of the qualification program for the analysis specialty will be derived from the analysis of the job and its tasks. General areas and issues to be addressed include

- safety analysis process and requirements --
  - non-reactor nuclear facility safety analysis report/technical safety requirements,
  - standard engineering practices,
  - Quality Assurance program plan,
  - work instructions manual,
  - Federal, state, and local regulations,
  - DOE Orders, and
  - engineering codes and standards;
- safety analysis techniques --
  - quantitative and qualitative risk analysis and assessment,
  - statistical analysis,
  - computer modeling,
  - hazard communication, and
  - double-contingency analysis;
- nuclear criticality safety specifics (see section B.2 below) --
  - evaluation methods; and
- facility systems, components, controls, and operations --
  - engineering design,
  - facility applications (e.g., electrical, nuclear, process chemistry, thermodynamics),
  - operating procedures,
  - exposure control,
  - waste management, and
  - equipment/configuration drawings and materials information.

B.2 Evaluation. The actual content of the qualification program for the evaluation (of subcriticality) specialty will be derived from the analysis of the job and its tasks. General areas and issues (in addition to those that apply from the analysis specialty) to be addressed include

- evaluation tools --
  - handbooks of critical and subcritical systems,
  - textbooks,
  - data and correlations,
  - discrete ordinates transport,
  - diffusion theory,
  - Monte Carlo,
  - reaction cross sections, and
  - other computer codes;
- modeling --
  - configuration model,
  - material characterization,
  - normal and accident conditions,
  - calculational technique (code, cross sections, options used, etc.), and
  - comparison to performance criteria;
- applications --
  - safety and accident analysis, and
  - criticality accident alarm system and detectors; and
- support --
  - code output technical review and task quality assurance,
  - code conversion and verification,
  - code benchmark and validation,
  - reports and documentation, and
  - computer operating systems.

B.3 Implementation. The actual content of the qualification program for the implementation specialty will be derived from the analysis of the job and its tasks. This area addresses the administrative interface with most aspects of nuclear criticality safety and, thus, is the most facility-specific of the functional specialties and has the least availability of formal training. General areas and issues to be addressed include

- general administration --
  - documentation and records,
  - basic cognizance/awareness of facility activities, and
  - management and staff interfaces;
- *training and qualification* or certification --

- training role for operators, new employees, managers, and fissionable material handlers,
- instructor qualification,
- training evaluation, and
- NCSS qualification coordination;

• DOE Orders, industry standards, and other requirements --

- regulatory compliance and licensing,
- application preparation, and
- standards and DOE Orders;

• analysis and evaluation interface --

- monitoring of proposed facility changes,
- design, analysis, and evaluation review,
- proposed specifications, technical safety requirements, and operating safety requirements,
- controls, limits, and conditions, and
- double-contingency demonstration;

• incidents and occurrence classifications --

- incident/accident investigations and root cause analysis,
- incident trends,
- incident reports and corrective actions,
- historical accident descriptions and lessons learned, and
- recovery planning;

• emergency response --

- emergency response team staffing, training, and support,
- emergency planning,
- evacuation planning,
- alarm system interface, and
- recovery planning;

• audits, assessments, and inspections interface --

- planning and conduct, and
- responses and corrective actions;

• policies, procedures, and programs --

- human factors evaluations, and
- review, comment, and approval; and

• facility interface functions --

- radiation, industrial, and other safety items,
- fire protection,

- safeguards and security, and
- task forces.

B.4 Confirmation. The actual content of the qualification program for the confirmation specialty will be derived from the analysis of the job and its tasks. General areas and issues to be addressed include

- applications --
  - surveillance,
  - audit, and
  - inspection;
- relationships and responsibilities;
- utilization --
  - work practices,
  - procedures,
  - specifications and postings,
  - training,
  - design and construction,
  - analysis and evaluation,
  - interfaces,
  - performance,
  - regulatory compliance, and
  - good practices;
- locations --
  - work station,
  - area,
  - building,
  - site, and
  - function;
- scheduling --
  - routine,
  - specific activity, and
  - problem related;
- time allocation;
- applications --
  - performance standards and criteria, and
  - checklist;

- reporting results;
- follow-up; and
- consultation for management-led assessments.